IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR U.S. LETTERS PATENT

Title:

STRETCHER CARRIER

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CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This application claims the benefit of U.S. provisional Application Serial No. 60/405,324, filed August 23, 2002 and entitled STRETCHER CARRIER.

BACKGROUND OF THE INVENTION

[0002] Stretchers, body boards and gurneys are currently used for transporting patients to an emergency vehicle. Such devices suffer from various disadvantages. For instance, when transporting a patient by a hand carried stretcher, body board, or stokes basket, a bouncy effect is generally experienced during a walking or running gait. Carrying a relatively heavy patient over long distances can cause the bearers of the stretcher, body board, or stokes basket to fatigue.

[0003] Gurney users also suffer from various disadvantages such as difficulty in maneuvering over obstructions due to the small size of gurney wheels. It is quite difficult to run with a gurney when speed is a primary concern, particularly if the terrain is soft or uneven. Additionally, the number of gurneys available in an offsite or remote area is usually limited because of the size and space they take up in rescue vehicles and also because of their expense.

[0004] Therefore, an improved device for transporting injured or sick patients across various terrains is needed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Figure 1 illustrates a stretcher carrier according to an embodiment the invention, wherein the stretcher carrier is set up in a first operational configuration for supporting a patient.

[0006] Figure 2 illustrates the stretcher carrier in a second operational configuration for transporting a patient.

[0007] Figure 3 is a cut-away view showing assembly of the stretcher carrier.

[0008] Figures 4 and 5 show the stretcher carrier supporting a stretcher.

[0009] Figure 6 illustrates a safety braking mechanism for a foot prop of the stretcher carrier according to the invention.

[0010] Figure 7 illustrates activating a release mechanism for the foot prop of the stretcher carrier.

[0011] Figure 8 shows the stretcher carrier equipped with all-terrain wheels.

[0012] Figures 9 and 10 illustrate removal and installation of axles of the stretcher carrier.

[0013] Figures 11-13 illustrate an axle for use with all-terrain wheels for the stretcher carrier.

[0014] Figures 14 and 15 show an axle including wheel retaining element for use with conventional bicycle-type wheels.

[0015] Figure 16 shows the stretcher carrier in a collapsed position for storage, wherein the wheels and axles of the stretcher carrier have been removed.

BRIEF SUMMARY OF THE INVENTION

[0016] The stretcher carrier according to the invention overcomes the above problems. The stretcher carrier makes it possible to transport injured persons on wheeled stretchers in a relatively easy manner over almost any type of terrain not accessible by vehicles. The carrier can be folded into a very compact storage configuration and set up from the storage configuration to its operational configuration very quickly. A stretcher can be quickly attached or

detached from the carrier. The carrier further includes a foot prop that makes it possible to have the patient safely and stably positioned on a level surface unsupported by a stretcher-bearer. Additionally, the carrier includes a novel foot prop locking and release mechanism that facilitates movement of the foot prop between a downward, extended position in which the carrier is supported on the support surface by the foot prop and an upward, folded position in which the foot prop is elevated to facilitate rolling the carrier across terrain.

[0017] The carrier according to the invention may be equipped with special all-terrain wheels such as those disclosed in U.S. Patent No. 4,538,657 and U.S. Patent No. 6,279,631, the disclosures of which are incorporated herein by reference in their entirety. Alternatively, the carrier may be equipped with conventional, bicycle-type wheels.

[0018] Other objects and advantages of the invention will become readily apparent from the following detailed description and drawings, wherein preferred embodiments of the invention are shown and described.

DETAILED DESCRIPTION OF THE INVENTION

[0019] Figure 1 illustrates a stretcher carrier **1** according to one embodiment of the invention. The stretcher carrier **1** includes a collapsible and expandable frame **10** and wheels **75** which can be mounted to and removed from the frame **10** without tools. The frame **10** may be constructed of very strong anodized, non-corrosive or rustproof aluminum such that the frame is capable of supporting a person weighing over 500 pounds on a stretcher. According to a preferred embodiment, the carrier **1** is also lightweight in that it weighs only about 35 pounds fully assembled.

[0020] Referring still to Figure 1, the frame **10** includes a stretcher platform **20** for supporting a stretcher, a wheel leg support **30** for supporting the wheels **70**, a foot prop support **40** and a foot prop **50** pivotally attached to the foot

prop support **40** for supporting the stretcher carrier **10** on a ground surface. The frame **10** can be assembled for use as shown in Figures 1 and 2, and can be collapsed or folded into a storage configuration as shown in Figure 16. The means and methods by which the frame is expanded, assembled and collapsed are discussed in following paragraphs.

[0021] As best shown in Figures 1 and 2, the stretcher platform **20** includes a pair of stretcher platform legs **22** spaced apart and extending parallel to each other, and a pair of stretcher platform crossbars **24** disposed at opposite ends of the stretcher platform **20** and extending between the platform legs **22**. The wheel support **30** includes a pair of wheel support legs **32** spaced apart and extending parallel to each other. A wheel support crossbar **33** is attached between the wheel support legs **32** to reinforce the wheel support legs **32** and the foot prop support legs **42**. The foot prop support **40** includes a pair of foot prop support legs **42** spaced apart and extending parallel to each other. A foot prop support crossbar **43** extends between the foot prop support legs **42** at a first end of the foot prop support **40** to reinforce the foot prop support legs **42**. The foot prop **50** includes foot prop legs **52** and a foot prop base member **53** extending between the legs **52**. The foot prop **50** is pivotally attached to a second end of the foot prop support **40** via pivot elements **2**. The pivot elements **2** may include a pin or bolt **3** and a stabilizing arm **4** for stabilizing the foot prop **50**.

[0022] The wheel support **30** and foot prop support **40** are pivotally connected to each other by a first set of pins or bolts **5** disposed in pin/bolt holes (not shown) located at intermediate positions along the length of the wheel support legs **32** and the foot prop support legs **42**. The wheel support **30** is pivotally fastened, at a first end **34** thereof, to the stretcher platform **20** by a pair of pins or bolts **6**. The pins/bolts **6** are received in holes (not shown) in the wheel support legs **32** and fastener holes (not shown) in the stretcher platform legs **22**. The foot prop support **40** can be attached, at the first end thereof, to the stretcher platform **20** by fasteners **7**, which are preferably lock knob fasteners.

The fasteners **7** are received in fastener holes **26** in the stretcher platform legs **22** and fastener holes **45** in the platform legs **22**. Thus, when the frame **10** is assembled as shown in Fig. 1, the first end of the wheel support **30** and the first end of the foot prop support **40** are longitudinally spaced from each other on the stretcher platform **20**. According to the arrangement described above, each wheel support leg **32** is pivotally attached to a respective platform leg **22**, and is also pivotally attached to a respective wheel support leg **32**. Each foot prop support leg **42** can be fixed to a respective platform leg **22** to lock the fame **10** in an operational configuration, or detached from the respective platform leg **22** to allow the frame to be folded or collapsed into a storage configuration.

[0023] Figure 1 shows the stretcher carrier **1** assembled for use in a first operational configuration in which it is prepared to receive a stretcher. In this position, the stretcher platform **20** is substantially parallel to the ground surface, and the wheel leg **30**, foot prop support **40** and foot prop **50** are locked in fully extended positions such that the wheel leg **30** and foot prop support **40** form an X-shaped structure when viewed from a side view. The wheels **75** are rotatably mounted to a second end of the wheel leg **30** and rest on the ground surface. The foot prop **50** rests on the ground surface, with the base member **53** engaging the ground surface, and serves in conjunction with the wheels **75** to stabilize and support the carrier **1** in a stationary position. Thus, in the position shown in Fig. 1, the wheel leg **30**, foot prop support **40**, foot prop **50** and wheels **75** support the platform **20** in a substantially horizontal position with respect to the ground surface.

[0024] Figure 2 shows the carrier **1** assembled in a second operational configuration for transporting a patient once a stretcher is loaded onto the carrier, or for otherwise rolling the carrier across along the ground or other surfaces. As shown in Figure 10, in this position, the stretcher is configured in a similar manner to the first operational configuration described in the preceding paragraph, except that the foot prop **50** is rotated in a first rotational

direction **R1** such that it is partially folded in an upward position so as to clear the ground surface. Thus, in this position, the carrier **1** can be rolled across various terrains without the foot prop **50** contacting the ground surface.

[0025] According to a preferred embodiment of the invention, the frame may be locked into its assembled form by tightening the two fastening elements **7**. Each fastening element **7** may include threaded knob **8** and mating threaded bolt **9**. Locking of the assembled frame **10** can be achieved by inserting the threaded bolts **9** into the fastening holes **26** and **45**, and turning the knobs **8** such that the knobs **8** turn down on the threaded bolt **9** to the point that the wheel support **30** is tightly fixed to the stretcher platform **20**. Locking the frame **10** prevents the wheel support **30** and foot prop support **40** from collapsing/folding under a load. The threaded bolts **9** may have special threads such that only one to two 360 degree twist of the knob **8**, as shown in Figure 3, is required to lock the frame **10** into its operational configuration. In particular, the threads of the bolt **9** may have a thread ratio of 4 quads pitch. The threads are typically spaced about 1.75 mm apart on a 10mm unthreaded diameter. For example, one 360 degree revolution of the knob **8** moves the lock knob in or out about ¼ of an inch. Also, as shown in Figure 1, depressions (not shown) in the platform legs **22** and projections **47** of the foot prop support legs **42** can be provided to help align the frame **10** for ease of inserting the bolts **9** into the fastener holes **26, 45**.

[0026] The stretcher platform **20** includes stretcher clamps **27** and optional stretcher pads **23** for securing a stretcher **200** to the carrier **1** as illustrated in Figures 1, 4 and 5. The clamps **27** and pads **23** are arranged such that the stretcher arms **201** rest on the pads **23** and the clamps **27** firmly grasp the stretcher arms **201**. The clamps **27** may comprise members including a threaded knob **28**, and a threaded, hooked arm **29**. The threads of the arm **29** may have the same specifications as the threads of the threaded bolts **9** of the fasteners **7**. A stretcher **200** can be secured onto the carrier **1** by simply aligning the stretcher arms **201** onto the pads **28**, placing the arms **29** over the

rods **201** and turning the knobs **28** onto the arms **29** until the arms **29** secure the stretcher **200** on the platform **20**.

[0027] The carrier **1** employs a novel foot prop locking and release mechanism **60**, as best shown in Figures 1, 7 and 8. The release mechanism **60** allows the foot prop **50** to be moved from its extended, downward position (illustrated in Figures 1 and 7, for example) to its folded, upward position (illustrated in Figure 2). The release mechanism **60** includes a locking plate **61** retained near the second end of the foot prop support **40** by locking plate retaining elements or cords **62**, two main springs **63** each secured to locations on the foot prop support legs **42** and locations on the foot prop legs **52**, and a foot prop release pedal **64** pivotally attached to one of the foot prop legs **52** and arranged to pivot so as to engage and disengage the locking plate **61**. Each spring **63** is attached to a foot prop leg **52** by a safety braking mechanism including a steel cord **64**, a cord retaining pin **65** located on the foot prop support leg **42** and a connecting pin **66** located on the foot prop leg **52**. One end of the steel cord **64** is connected to an end of the spring **63**. The cord **64** extends over the retaining pin **65**. A second end of the cord **64** is connected to the connecting pin **66**. When the foot prop **50** is folded in the rotational direction **R2** into a collapsed storage position as shown in Fig. 6, the safety braking mechanism relieves tension in the spring **63** and prevents the foot prop **50** from snapping back suddenly towards its extended position. Without the safety braking mechanisms, the springs **63** would be under high tension when the foot prop is folded in its storage position, and the foot prop **50** could possibly snap back rapidly and injure the hand or leg of the operator.

[0028] Referring to Figure 1, when the foot prop **50** is locked in its downward position (substantially parallel to the foot prop support **40**), the locking plate **61** engages retaining edges **54** of the foot prop legs **52** and obstructs rotation of the foot prop **50** in a first rotational direction **R1**. By obstructing a portion of the foot prop **50**, the locking plate **61** prevents rotation of the foot prop **50** to its upward position and therefore locks the foot prop **50** in its extended

position.

[0029] In order to move the foot prop **50** from its extended position to its upward, partially folded position, as illustrated in Figure 2, the stretcher operator needs only to press down on the release pedal **64** as indicated by the arrow in Figure 7, so as to rotate the release pedal **64** into engagement with the locking plate **61**. The release pedal **64** is easily operated by the operator's foot. When the release pedal **64** engages the locking plate **61**, the locking plate **61** disengages the retaining edge **54** of the foot prop **50**. The foot prop **50** then rotates into its upward, folded position under the tension force of springs **63**.

[0030] To return the foot prop **50** to its downward, extended position, the carrier operator/bearer simply needs to somewhat quickly push the foot prop **50** (using the operator's foot) so that so that foot prop **50** rotates in a second rotational direction **R2** opposite the first rotational direction **R1** until the foot prop **50** is positioned slightly past its extended, locked position, and thereafter release the foot prop **50**. As the foot prop **50** is rotated in the second direction past its extended, locked position, the locking plate **61** falls into position for engaging the retaining edge **54** of the foot prop **50**. Once the foot prop **50** has been rotated past its extended, locked position and released by the operator, the foot prop **50** will return to the extended, locked position under the tension force of the springs **63**.

[0031] The carrier **1** can be used in urban environments or other environments including generally hard surfaces when equipped with wheels **75**, which may be conventional bicycle-type wheels (shown in Figure 1, for example).

[0032] As shown in Figure 8, carrier **1** may alternatively be equipped with all-terrain wheels **70** for use in beach, wilderness or other off-road environments. The all-terrain wheels **70** have pneumatic, flexible, plastic tires **71** that were developed specifically for sand, mud, loose gravel and other soft or uneven terrain. All-terrain wheels **70** can also be used on hard surfaces. Such all-

terrain wheels are disclosed in U.S. Patent No. 4,538,657 to Tuggle and U.S. Patent No. 6,279,631 to Tuggle, the disclosures of which are incorporated by reference in their entirety. As disclosed in U.S. Patent No. 4,538,657, wheel **70** may include a low pressure tire **71** comprising a thin-walled torus of elastomeric material, the torus having an inner diameter surface for engaging a tire supporting rim **72**, means (such as a valve or sealable opening **74**) for inflating the torus to a low pressure configuration and an outer diameter surface for contacting said soft or irregular support surfaces, wherein the torus deforms or flattens substantially when said tire **71** contacts said surfaces with an axle load applied to said wheel **70**. Alternatively, as disclosed in U.S. Patent No. 6,279,631, the torus may be made of a flexible substantially inelastic material that will flatten under a load to facilitate movement of the tire over soft or regular support services and will not deform up to a temperature of about 225°F.

[0033] Because of the different functional demands of wheels **70** and wheels **75**, specific axles **80** and **90**, shown in Figure 9, are provided for the wheels **70** and **75**, respectively. The axle **80**, which is used with wheels **70**, is larger in diameter than axle **90**. According to one embodiment of the invention, axle **80** may have a diameter of 1" and axle **90** may have a diameter of ½". However, other diameters could be used for each axle. In order to allow the frame to accommodate either of axles **80** and **90** without modification, each wheel support leg **32** preferably has a first axle hole **35** sized to receive the axle **80** and a second axle hole **37** sized to receive the axle **90**. Thus, axles **80** and **90** can easily be exchanged for one another on carrier **1**.

[0034] According to preferred embodiments of the invention, the axles **80** and **90** include unique features. As shown in Figure 11, the axle **80** includes a roll pin **82** that is received through holes **81** in opposite sides of the axle **80** near a first end **85** of the axle **80**. The roll pin **82** extends through the axle in a direction orthogonal to the longitudinal axis **X** of the axle **80** and preferably protrudes about 5/32" from diametrically opposite sides of the axle **80**.

Referring again to Figure 9, an annular stop **83** is provided at the second end **86** of the axle **80**. Each axle hole **35** has roll pin slots **36** (shown in Figure 10) which allow the roll pin **82** to pass through the axle hole **35** when the roll pin **82** is aligned with the roll pin slots **36**, and which prevent the roll pin **82** from passing through the axle hole **35** when the roll pin **80** is out of alignment with the roll pin slots **36**. The annular stop **83** has a greater diameter than the axle hole **35** and therefore cannot pass through the axle hole **35**. The annular stop **83** includes a marking or raised element **84** (illustrated in Figure 9) that is aligned with the roll pin **82** to indicate the position of the roll pin **82**. Alternatively, another roll pin **82** may be substituted for annular stop **83**. The axle **80** can be installed by aligning the roll pin **82** with the roll pin slots **36**, inserting the first end **85** of the axle **80** through the axle holes **35** until the roll pin **82** and annular stop **83** are located just outside a respective wheel leg **32** and thereafter turning the axle **80** such that the roll pin **82** is out of alignment with the roll pin slots **36**. The axle **80** can be removed by aligning the roll pin **82** with the wheel stop slots **36** and thereafter sliding the axle **80** out through the axle holes **35**. Thus, the axle **80** can be installed and removed without removing the roll pin **82**. The marking or raised element **84** makes it easy for the person installing or removing the axle to determine whether the roll pin **82** is aligned with the roll pin slots **36**. When the axle **80** is installed in the wheel support legs **32**, the roll pin **82** and annular stop **83** are each located between a wheel **70** and a wheel support leg **32** to prevent the wheels **70** from rubbing against the frame **10**. The roll pin **82** and annular stop **83** are used instead of removable spacers, because removable spacers could be lost in the process of assembling and disassembling the carrier **1**, in which case the carrier **1** would be rendered inoperable.

[0035] As depicted in Figure 10, the carrier **1** includes a fastening pin **110** to retain the axle **80** in place and prevent the axle **80** from rotating and sliding from side to side. The fastening pin **110** is inserted through fastening pin holes **31** in a wheel support leg **32** and fastening pin holes (not shown) in the axle **80**. The fastening pin **110** includes a finger ring **111** on one end for pulling by a person's finger to facilitate insertion and removal of the fastening pin **110**. The fastening pin **110** is attached to the wheel support leg **32** by a lanyard **114**, so that the fastening pin **110** may be held securely in place in the pin holes **31** when disassembling or collapsing the carrier **1** for storage.

[0036] Referring to Figures 11-13, the axle **80** includes two retaining pins **120**, each pin **120** being insertable in retaining pin holes **88** at the ends of the axle **80** for holding the wheel **70** on the axle **80**. Each retaining pin **120** includes a finger ring **121** on one end for pulling by a person's finger to facilitate insertion and removal of the fastening pin **120**. Each retaining pin **120** is held in place by the tension of a bungee cord lanyard **124** which is attached to a bungee cord **125** retained inside the axle **80**, as shown in Figures 7, 13a and 13b. The tension in the bungee cord **125** is just high enough to hold the retaining pins **120** inside the axle **80** with the finger ring **121** outside and firmly against the ends of the axle **80** when the retaining pins **120** are not in use (i.e., when removing axle **80** from the carrier **1**). The outside diameter of finger ring **121** is greater than the inside diameter of axle **80** but is slightly less than or equal to the outside diameter of axle **80**, so a portion of finger ring **121** will fit into axle **80** and will slide through the axle hole **35** illustrated in Figure 10.

[0037] The lanyards **124** are preferably made of a double looped cable looped around the finger ring **121** and attached to the bungee cord **125** with swedges **123**. The roll pins **82** are inserted in the axle **80** after the bungee cord **125** has been attached to the lanyards **124**. The roll pin **82** passes through the loop opening **122** in one of the lanyards **121**. The roll pins **82** thereby prevent the retaining pins **120** from being pulled too far to ensure that the bungee cord

125 is never exposed from the axle **80**. This construction prevents people from pulling the pin out too far out of curiosity, or by accident, and possibly breaking the bungee cord. Preferably, the lanyards **124** have a 900-pound test pull rating to prevent breakage. However, if for some reason the bungee cord **125** needs to be replaced, it can be removed by simply removing the roll pin **82** from the axle **80** and pulling the lanyard **124** out further from the axle **80** to expose the bungee cord **125**.

[0038] As shown in Figure 9, the axle **90** for use with conventional wheels **75** includes a roll pin **92** that is received through holes (not shown) in the axle **90** near the first end **95** of the axle **90**, and an annular stop **93** that is located near the second end **96** of the axle **90**. The annular stop **93** has an outer diameter that is greater than the diameter of the axle hole **37**, and also includes a marking or raised element **94** for indicating the position of the roll pin **92**. Preferably, the roll pin **92** protrudes about 1/8" from diametrically opposite sides of the axle **90**. Alternatively, another roll pin **92** may be substituted for annular stop **93**. Roll pin **92** and annular stop **93** are similar to roll pin **82** and annular stop **83**, except that roll pin **92** and annular stop **93** are sized to fit the axle **90**. Axle holes **37** include roll pin slots **38**, which are similar to roll pin slots **36**, except that roll pin slots **38** are sized to accommodate wheel stops **92**. Thus, the axle **90** can be installed and removed from the wheel support **30** in the same fashion as the axle **80**.

[0039] The axle **90** is provided with fastening pin holes (not shown) which can receive the fastening pins **110** described above. To fasten the axle **90** to the frame **10**, the fastening pin **110** is inserted through retaining pin holes **39** in a wheel support leg **32** and fastening pin holes (not shown) in the axle **90**.

[0040] The axle **90** does not include retaining pins, bungee cords or lanyards. Instead, as shown in Figures 10, 14 and 15, the axle **90** includes a pair of quick-release retaining elements **95** which have arms **96** that can be folded between a first position (Figures 10 and 14) in which the arms **98** are

substantially parallel to the longitudinal axis **Y** of axle **90**, and a second position (Figure 15) in which the arms **96** are substantially orthogonal to the axis **Y**. In the first position, arm **96** allows the wheel **75** to be removed from the axle and also allows the axle to be removed from the wheel support **30**. In the second position, arm **96** retains the wheel **75** on the axle.

[0041] Figure 16 shows the stretcher carrier **1** in its folded storage configuration without the wheels **70, 75** and axle **80, 90**. In a preferred embodiment, the carrier **1** is about 31" (length) X 24" (width) X 6" (height) when folded in the storage configuration without the wheels **70, 75** and axle **80, 90**. Thus, the carrier **1** is very compact to facilitate storage in a rescue vehicle or helicopter. Additionally, the size and weight of the carrier **1** makes it easy to parachute or cable down the carrier **1** from a helicopter so that a patient can be transported on the carrier **1** to the landing site of the helicopter. Stretcher carrier **1** can be folded into its storage configuration by folding foot prop **50** to its fully folded, storage position, removing wheels **70** or **75** and axle **80** or **90**, loosening fasteners **7** to release foot prop support **40** from the stretcher platform **20**, pivoting foot prop support **40**, folding foot prop **50** in a closed scissor position against foot prop support **40**, and pivoting wheel support **30** in the direction opposite the direction in which foot prop support **40** is pivoted such that wheel support **30** and foot prop support **40** with foot prop **50** are substantially parallel to stretcher platform **20**.

[0042] To use carrier **1**, patients are placed on a stretcher on the ground, and the stretcher is thereafter placed on the platform **20**. The four stretcher clamps **27** are then positioned to engage the stretcher **200**, and stretcher **200** is secured on platform **20** by turning knobs **28** of clamps **27** until knobs **28** are firmly tightened down. The clamps **27** have special threads, as disclosed above, so that it takes only about 3-4 full turns to firmly engage the stretcher **200**. A decal can be included on the stretcher carrier **1** to indicate where the stretcher **200** is to be placed on the stretcher platform **20** so there is minimal lifting by the stretcher-bearer, so almost all the energy is expended for pulling.

[0043] Normally the stretcher carrier **1** is pulled from one end thereof by one or two stretcher-bearers instead of there being a stretcher-bearer on each end of the stretcher **200**. The carrier **1** should almost always be pulled from the end with the foot prop **50**, with the patient's head also positioned at this end. It has been found that the patient's head does not bounce up and down nearly as much with the head at the same end of the carrier from which the carrier is being pulled. The head being at the end over the foot prop **50** is indicated by a decal on the stretcher carrier frame. There are exceptions where the stretcher bearer(s) and the patient's head may be at the opposite ends of the carrier **1**. These exceptions are: 1) if transporting a patient parallel to an incline, it would be best if there is a stretcher bearer at each end of the stretcher carrier **1** to keep the carrier **1** from turning over; 2) if the patient on the stretcher is in shock because of blood loss or other reasons, it is best to have the head lower than the feet. In this event, the stretcher bearer(s) would position themselves at the end of the carrier **1** opposite the end where the patient's head is located, and pull or push the carrier **1**. The head would automatically be lower than the feet because of the height of the stretcher **200** from the ground as related to the average height of the stretcher bearer(s). In other words, with the average height and above for most stretcher-bearers, the stretcher end being pulled or pushed is almost always higher than the opposite end. Incidentally, if the stretcher-bearers are pushing, they can better observe and monitor a patient in critical condition.

[0044] The following is a discussion of some advantages of the stretcher carrier **1** as compared to a stretcher alone or a gurney.

[0045] The advantages of the carrier over hand carried stretchers, body boards or stokes baskets are the following: 1) the stretcher carrier **1** provides an even, smooth ride for the patient without the bouncy effect from a walking or running gait - an injured or sick patient is already uncomfortable and needs to be moved as gently as possible to minimize further discomfort; 2) the stretcher carrier **1** makes it easier to carry a heavy patient long distances not accessible

by vehicles without fatiguing the stretcher bearer/bearers; 3) with a preferred width of about 27 inches with wheels **70** or **75** attached, which is just slightly wider than a stretcher, the stretcher carrier **1** can pass through narrow doorways easily, whereby when carrying a stretcher alone with a heavy person that requires four or more people, the extra people could not help bearing the weight because of the narrow doorway; 4) when speed is of utmost importance in a life or death situation, one or two persons could easily run with the stretcher attached to the carrier **1** of the invention, simply because, with the patient's weight centered over the wheels, there is almost no lifting required of the persons operating the carrier **1** while pulling the carrier **1**; 5) if a patient is in or almost in shock, the patient can be transported with her head lower than her feet in a Trendlenburg position, by positioning the head opposite the end of the carrier **1** with the foot prop; and 6) if a patient is experiencing a stroke or some other condition such as hemorrhaging above the waist, particularly in the head region whereby the head needs to be higher than the feet, the head may be placed at the end of carrier **1** that carrier **1** is being pulled from, thereby raising the stretcher **200** to elevate the head as much as possible.

[0046] The advantages of the carrier **1** over gurneys are the following: 1) the carrier **1** rolls easily over small obstructions that would normally stop small gurney wheels; 2) it is difficult to run with a gurney when speed is a primary concern; 3) in a mass casualty situation, mobility is more expeditious with the carrier **1** of the invention due to the more cumbersome construction of gurneys; 4) in a mass casualty situation, an unlimited number of stretchers **200** can be transported consecutively with each carrier **1** - normally, patients arriving at an emergency transporting vehicle are loaded in the vehicle on a gurney, which does not leave any way to pick up other patients unless more gurneys are available, and there are likely to be less gurneys available because of the size and space gurneys take up in rescue vehicles, and also because of the expense of gurneys; and 5) moreover, one person can easily transport a patient on level ground since the patient's weight is centered over the wheels,

thereby minimizing lifting effort.

[0047] In a preferred embodiment, the carrier **1** is fabricated with a relatively wide wheelbase. Because of the wide wheel base and the very substantial engaged foot prop **50**, the carrier **1** with a patient is very safe and stable on a level surface unsupported by stretcher-bearers. With foot prop **50** engaged, the paramedics can administer treatment more comfortably at waist level instead of ground level. The spring loaded foot prop **50** can be easily engaged or disengaged by the rescuer's foot. The foot prop **50**, when disengaged, folds out of the way for transporting the patient.

[0048] As stated above, the stretcher **200** can be quickly attached to or detached from the carrier **1** with the four easy-to-use knobs **28**. No time is lost in transferring a patient to an ambulance or helicopter. Additionally, the stretcher carrier can be used to carry other things such as emergency equipment including emergency kits, gear or other items needed in an emergency situation.

[0049] The foregoing description illustrates and describes the invention. Additionally, the disclosure shows and describes only the preferred embodiments of the invention, but as mentioned above, it is to be understood that the invention is capable of use in various other combinations, modifications and environments and is capable of changes or modifications within the scope of the inventive concept as expressed herein, commensurate with the above teachings, and/or the skill or knowledge of the relevant art. The embodiments described hereinabove are further intended to explain best modes known of practicing the invention and to enable others skilled in the art to utilize the invention in such, or other, embodiments and with the various modifications required by the particular applications or uses of the invention. Accordingly, the description is not intended to limit the invention to the form disclosed herein.